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# Nutrition Counts

1993-1994 Annual Report  
Massachusetts Pediatric Nutrition Surveillance

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Massachusetts Department of Public Health  
Bureau of Family and Community Health  
150 Tremont Street  
Boston, MA 02111



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# **Nutrition Counts**

## **1993 - 1994 Annual Report**

### **Massachusetts Pediatric Nutrition Surveillance**

#### **Introduction**

Nutrition Counts is a part of the Massachusetts Pediatric Nutrition Surveillance System coordinated by the Office of Nutrition and the Office of Statistics and Evaluation, within the Bureau of Family and Community Health at the Massachusetts Department of Public Health. Nutrition Counts is designed to identify and monitor the nutritional status of children in the Commonwealth. Nutrition-related problems identified through Nutrition Counts are addressed promptly by program staff and/or policy makers and legislators. Data on the nutrition status of preschool children are collected from participating Head Start programs across Massachusetts. In addition to Head Start data, the Pediatric Nutrition Surveillance System in Massachusetts collects data on children enrolled in the Special Supplemental Feeding Program for Women, Infants and Children (WIC). The data from WIC are not included in this report.

Nutrition Counts was established in response to the results from the 1983 Massachusetts Nutrition Survey. The survey found that nearly one in five low-income infants and preschoolers in Massachusetts was at risk for anemia, poor growth, and/or overweight. Through Nutrition Counts the nutritional status of preschool children is monitored and individual children at nutritional risk are identified. Nutrition Counts also provides a mechanism for identifying nutrition-related problems at the community level. Program planners and managers can use Nutrition Counts data to improve the effectiveness of their own programs and initiate interventions aimed at improving nutrition status in their community. Nutrition Counts data can also be used to support program advocacy and in writing grant applications.

Nutrition Counts uses height and weight measurements to identify poor growth, underweight, and obesity in children. Hematocrit, hemoglobin, and FEP values are used to screen for possible anemia. Blood lead levels are used to screen for lead poisoning. A summary of the pediatric nutrition status indicators used in Nutrition Counts and Pediatric Nutrition Surveillance are presented in Appendix 1.

Data from Nutrition Counts and pediatric data from the Massachusetts WIC Program are submitted to the Centers for Disease Control and Prevention (CDC) for inclusion in the National Pediatric Nutrition Surveillance System (PedNSS). The National PedNSS includes data on children's growth and nutrition status from across the nation. CDC established PedNSS in 1973 to help states monitor the nutritional status of low-income children. PedNSS is also used to monitor progress towards achieving some of the Healthy People 2000 objectives, specifically with regard to the reduction of growth



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retardation and anemia. In 1993 thirty-nine states and territories participated in the PedNSS and contributed over four million records. Nationally, over half of PedNSS data comes from WIC programs. EPSDT, Well Child clinics, and Head Start are other sources of PedNSS data.

In Massachusetts, local Head Start programs voluntarily participate in Nutrition Counts. In exchange for providing Nutrition Counts data to the Massachusetts Department of Public Health, training in accurately weighing and measuring, measuring equipment, technical assistance in collecting and interpreting Nutrition Counts data, and site-specific Nutrition Counts reports are provided to participating Head Start programs. Heights and weights are recorded for each child in Head Start programs by local staff. Training on weighing and measuring children is provided to local Head Start staff by the Office of Nutrition. Hematological tests are conducted by the child's physician and the results are provided to local Head Start staff. Office of Nutrition staff provide technical assistance to local Head Start staff in collecting Nutrition Counts data, interpreting Nutrition Counts reports, and providing guidance to local Head Start staff in assessing and treating individual children found to be at nutritional risk.

Information on nutrition status of 2996 children participating at nine different Head Start programs during the 1993 - 94 academic year (September 1993 through June 1994) is presented in the Nutrition Counts 1993 - 1994 Annual Report. The nine Head Start programs that volunteered to participate were: ABCD (Boston), Cambridge, Cape Cod, Cape Anne, Communities United (Watertown), Franklin County, SMOG (Framingham), South Shore and Westfield. Data for Nutrition Counts were collected via Nutrition Counts data forms and, in the case of one program, via diskette. The Nutrition Counts data forms were completed by local Head Start program staff and submitted to the Massachusetts Department of Public Health. Office of Nutrition staff reviewed and edited the Nutrition Counts data. The Nutrition Counts data were analyzed by the Office of Statistics and Evaluation using the PedNSS software supplied by CDC.

Site-specific reports for Head Start programs participating in Nutrition Counts in 1993-94 were produced and sent to each participating program. The program-specific reports contained tables listing each individual child with high, low, or abnormal values for growth or hematological data to assist local staff in providing appropriate follow-up services to children at nutritional risk. In addition, each program received program aggregate data on the nutrition status of their participants. The Nutrition Counts 1993-94 Annual Report is the statewide aggregate of the Head Start program data. The Nutrition Counts 1993-94 Annual Report contains data on the prevalence of pediatric nutrition risk factors, including overweight, underweight, low iron status and high lead values. The data in the 1993-94 Nutrition Counts Annual Report is only representative of the children in the participating Head Start programs and is not indicative of the nutritional status of the low-income pediatric population of Massachusetts nor of all Massachusetts Head Start participants.



## Summary of 1993-94 Nutrition Counts Data

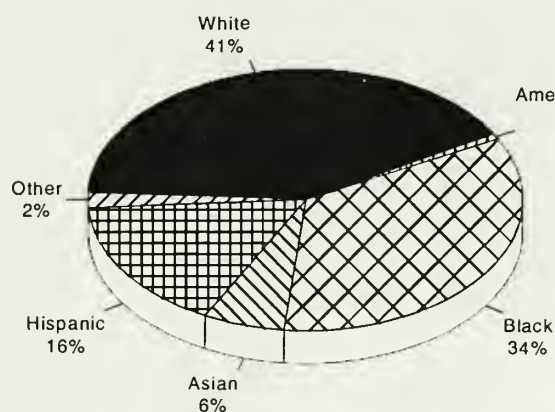
- Of the participating Head Start children in this sample 41% were white, 34% were black, 16% were Hispanic, 6% were Asian, 1% were American Indian, and 2% were classified as other.
- Out of 2828 Head Start children, 381 (13.5%) were considered overweight (high weight for height).
- Short stature (low height for age), an indicator of possible chronic malnutrition, was identified in 181 (6.4%) of the Head Start children.
- Thirty-nine (1.4%) of the Head Start children were underweight (low weight for height).
- Anemia (low hematocrit and/or hemoglobin) was seen in 359 (14%) of the 2644 children with hematocrit or hemoglobin results.
- Elevated lead levels were observed in 123 (9.5%) of the 1299 children with reported lead results.
- Among children with known race, short stature was most frequently seen in white children (8.6%), followed by Asian children (7.1%), and Hispanic children (6.7%).
- Also among children with known race, overweight was seen most frequently among Hispanic children (17.5%).



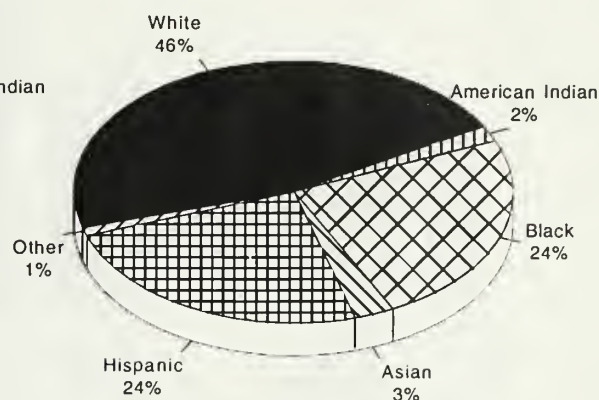
# Ethnic Composition

## National PedNSS vs Nutrition Counts

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Nutrition Counts 1993-1994\*



National PedNSS 1993 \*\*

\* N = 2,996 \*\* N = 1,532,044

Pediatric Nutrition Surveillance System, MDPH, 1994

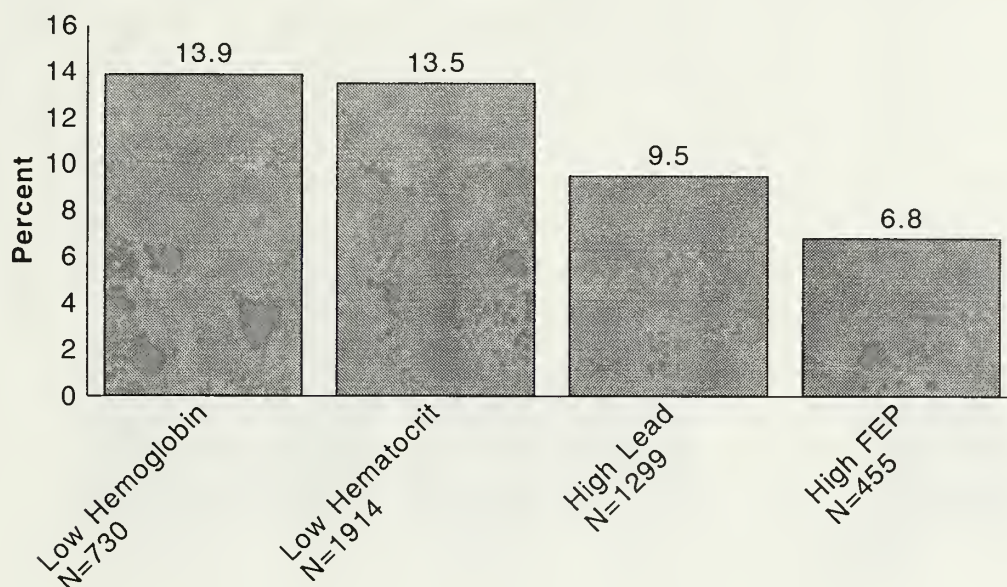
- Hispanic, Black, and Asian children make up 56% of the 1993-94 Nutrition Counts participants and 51% of the 1993 National Pediatric Nutrition Surveillance System records for 3 to 5 year old children.
- In the 1993-94 Nutrition Counts data, 34% of the 3 to 5 year old children were Black. In the 1993 National Pediatric Nutrition Surveillance System data, 24% of the 3 to 5 year old children were Black.
- In the 1993-94 Nutrition Counts data, 16% of the 3 to 5 year old children were Hispanic. In the 1993 National Pediatric Nutrition Surveillance System data, 24% of the 3 to 5 year old children were Hispanic.





# Hematological Data Massachusetts Head Start Nutrition Counts 1993-1994

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Pediatric Nutrition Surveillance System, MDPH, 1994

- Of the children with reported hematocrit or hemoglobin values, more than 13% in 1993-94 Nutrition Counts had anemia.
- Among the 1993-94 Nutrition Counts participants with lead data, 9.5% of the children had lead levels of 10 ug/dl or more.
- In the 1993 National Pediatric Nutrition Surveillance System data, the prevalence of anemia among 3-5 year old children was 17.2%.

Note: The indicators used to determine anemia or high lead are as follows:

|                   |              |
|-------------------|--------------|
| Hemoglobin <11.2% | FEP >35      |
| Hematocrit <34.0% | Pb $\geq$ 10 |



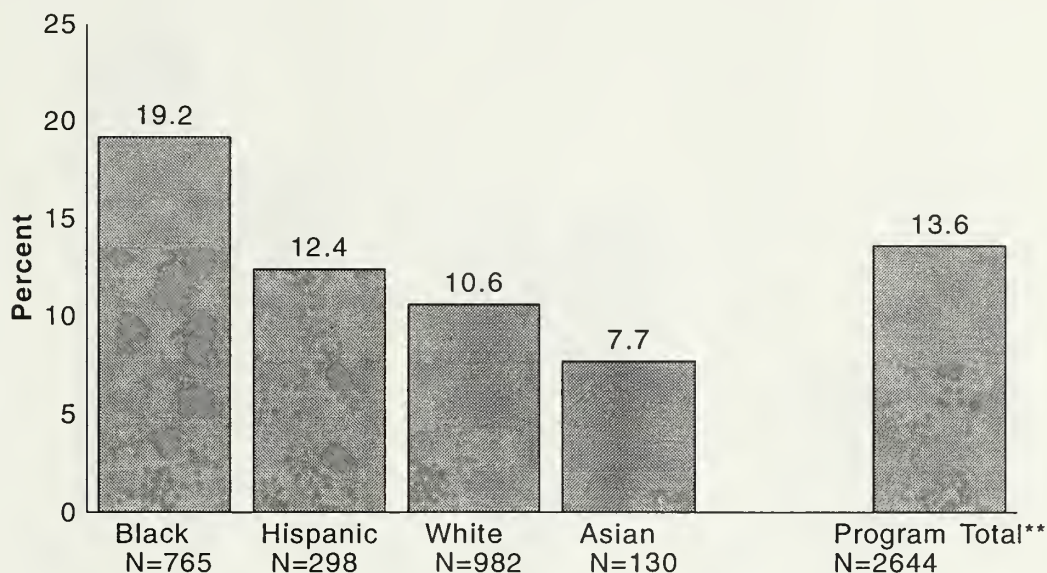


# Anemia\* by Ethnicity

## Massachusetts Head Start Programs

### Nutrition Counts 1993-1994

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\*Low hematocrit and/or low hemoglobin  
Pediatric Nutrition Surveillance System, MDPH, 1994

- Black children were twice as likely to have low hematocrit and/or hemoglobin as white children.
- In the 1993 National Pediatric Nutrition Surveillance System data, the prevalence of anemia among 3-5 year olds was 26.6% for black children, 17.7% for Asian children, 16.8 for Hispanic children, and 15.4% for white children.

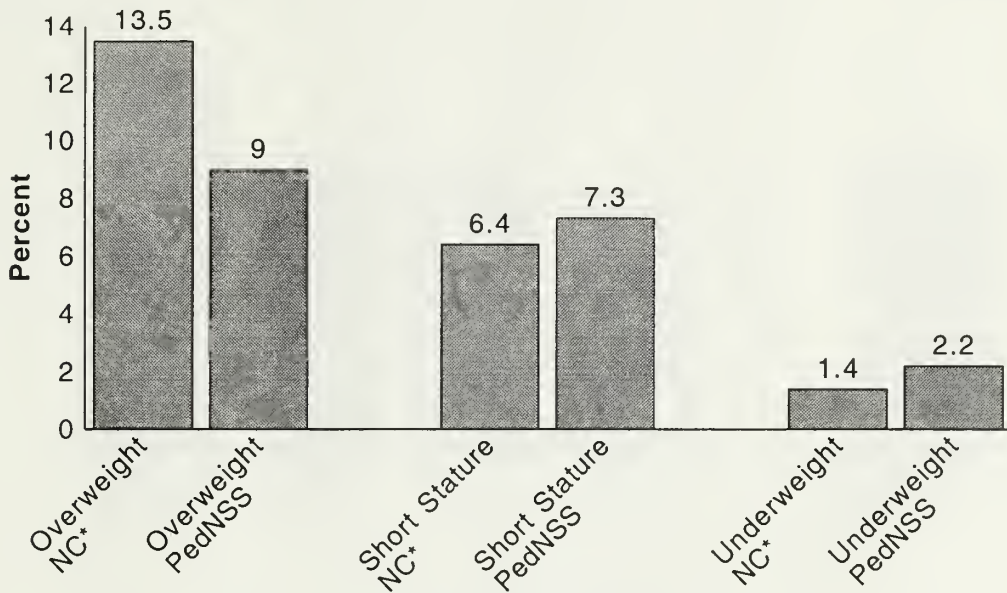
Note: This data was determined by an analysis of hematocrit and hemoglobin only. 1994 Nutrition Counts data for 56 Hispanic children and 15 Asian children were excluded from this analysis because the sample size for that year was too small.

\*\*Children for which race was unknown are included in the program total.



# Anthropometric Data Massachusetts Head Start Nutrition Counts 1993-1994

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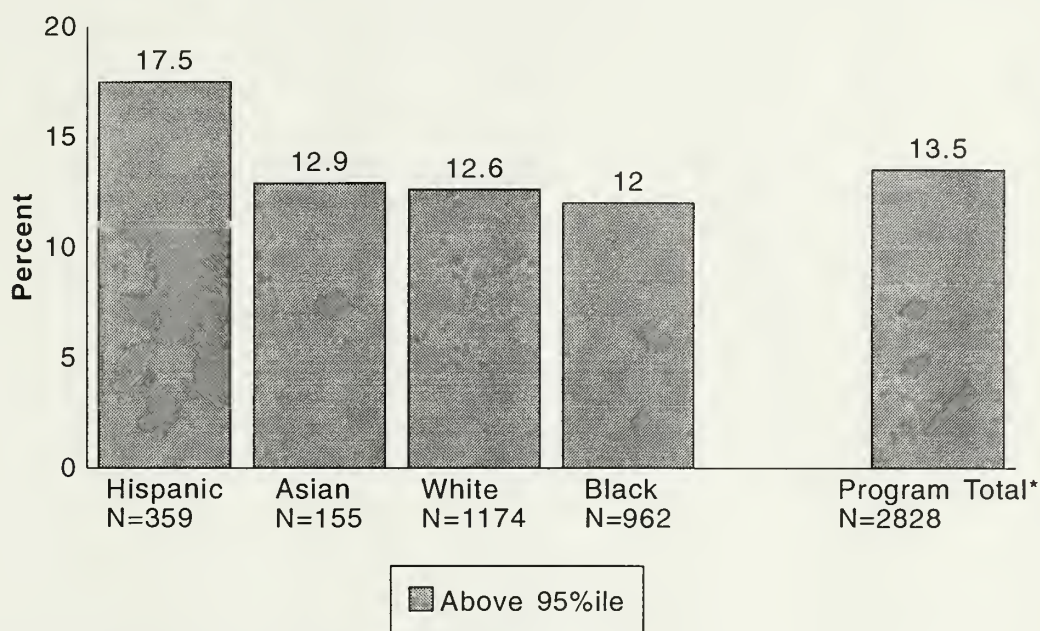
Pediatric Nutrition Surveillance System, MDPH, 1994

- 13.5% of all children participating in 1993-94 Nutrition Counts were overweight and 6.4% had short stature.
- Of the 2828 children contributing weight data in 1993-94 Nutrition Counts, only 1.4% of the children were underweight.
- In the 1993 National Pediatric Nutrition Surveillance System data, the prevalence of overweight was 9.0% and the prevalence of underweight was 2.2% among 3-5 year old children.

Note: Overweight is defined as weight for height > 95%ile.  
Underweight is defined as weight for height < 5%ile.  
Short stature is defined as height for age < 5%ile.  
\*NC = Nutrition Counts



# High Weight for Height by Ethnicity Massachusetts Head Start Programs Nutrition Counts 1993-1994



Pediatric Nutrition Surveillance System, MDPH, 1994

- 13.5% of the children in 1993-94 Nutrition Counts were overweight. In the 1993 National Pediatric Nutrition Surveillance System data, 9% of the 3-5 year children were overweight.
- 17.5% of Hispanic children in 1993-94 Nutrition Counts were overweight.
- In the 1993 National Pediatric Nutrition Surveillance System data prevalence of overweight was highest among Hispanic children (13.2%) and American Indian children (13%).

Note: Overweight is defined as weight for height > 95%ile.

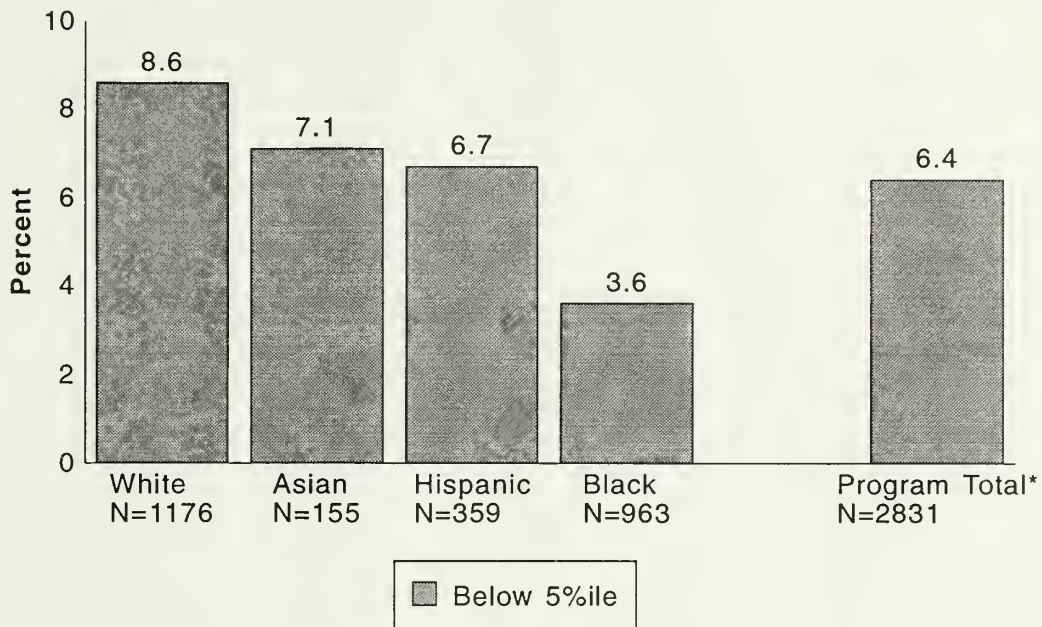
\*Children for which race was unknown are included in the program total.





# Low Height for Age by Ethnicity Massachusetts Head Start Programs Nutrition Counts 1993-1994

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Pediatric Nutrition Surveillance System, MDPH, 1994

- Overall 6.4% of the children participating in 1993-94 Nutrition Counts had short stature, with the greatest prevalence among white children (8.6%).
- In the 1993 National Pediatric Nutrition Surveillance System data, the prevalence of short stature was 7.3% among 3-5 year old children, with the greatest prevalence among Asian children.

Note: Short stature is defined as height for age < 5%ile.

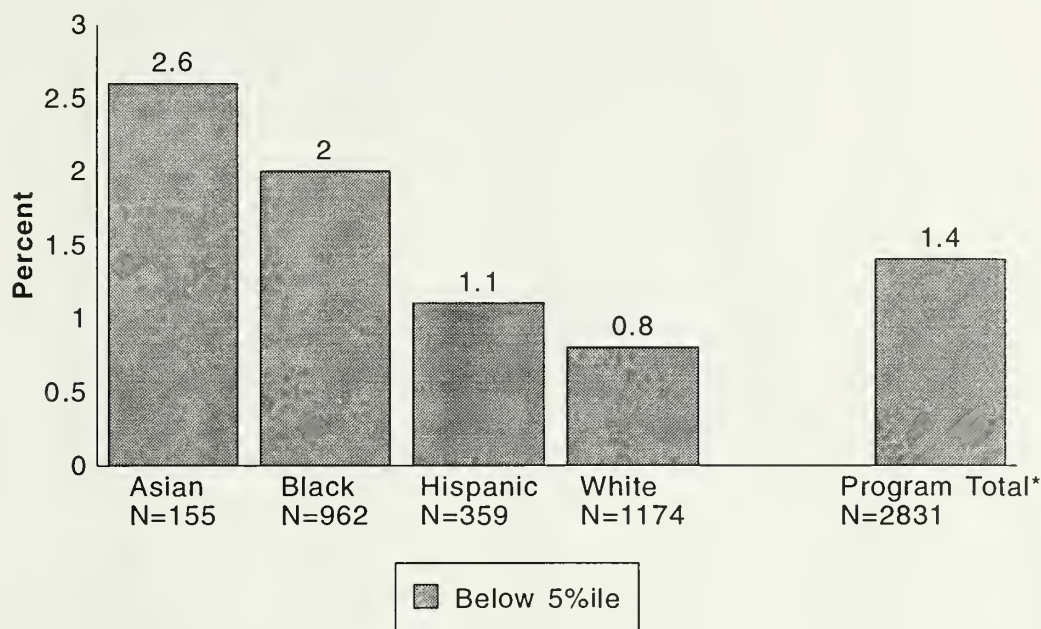
\*Children for which race was unknown are included in the program total.





# Low Weight for Height by Ethnicity Massachusetts Head Start Programs Nutrition Counts 1993-1994

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Pediatric Nutrition Surveillance System, MDPH, 1994

- 1.4% of all children participating in 1993-94 Nutrition Counts were underweight with the greatest prevalence among Asian children (2.6%).
- In the National Pediatric Nutrition Surveillance System data, the prevalence of underweight among 3-5 year old children was highest among black children (2.9%).

Note: Underweight is defined as weight for height < 5%ile.

\*Children for which race was unknown are included in the program total.



## Appendix 1

### Pediatric Nutritional Status Indicators

| Index             | Purpose  | Cut-Off Values  | Nutritional Implication  | Limitations   |
|-------------------|--|---|--|---|
| Height-for-age    | Compares child's height to reference population of same age and sex. | <5th NCHS/CDC percentile                              | Short stature; possible chronic undernutrition                             | Not sensitive to short-term fluctuations in nutrient intake. May reflect endocrine disorders or heredity. Accurate measures require training and appropriate equipment. |
| Weight-for-height | Compares child's weight to his/her own height.                       | <5th NCHS/CDC percentile<br>>95th NCHS/CDC percentile | Underweight; possible acute undernutrition<br>Overweight; possible obesity | Doesn't assess body composition. Diagnosis may require other measures of body fat.  |



|                  |   |   |  |  |
|------------------|---|---|--|--|
| Hematocrit (Hct) | Indicator of iron status. Measures the volume of red blood cells in centrifuged blood. Expressed as corpuscular volume percent. | 1-1.9 yrs <33%<br>2-4.9 yrs <34%<br>5-7.9 yrs <34.5%<br>8-11.9 yrs <35.0%                 | Possible iron deficiency anemia.   | Less direct measure of iron deficiency than hemoglobin.            |
| Hemoglobin (Hgb) | Indicator of iron status. Measures the volume of the oxygen-carrying red pigment of the red blood corpuscles.                   | 1-1.9 yrs <11.0g/dl<br>2-4.9 yrs <11.2g/dl<br>5-7.9 yrs <11.4g/dl<br>8-11.9 yrs <11.6g/dl | Possible iron deficiency anemia.   | More expensive than hematocrit.                                    |
| Blood Lead (Pb)  | Direct measure of lead in blood.  | $\geq 10\mu\text{g/dl}$   | Lead poisoning; may effect growth, development and central nervous system. | Test based on venous samples are more reliable than finger sticks. |



|  |  |                         |  |   |
|--|--|-------------------------|--|---|
| Free Erythrocyte<br>Protoporphyrin (FEP) | Indicator of iron<br>status and lead<br>poisoning. | $\geq 35\mu\text{g/dl}$ | Possible iron<br>deficiency and/or<br>lead poisoning. Can<br>detect iron-deficient<br>stores prior to<br>anemia. | Not specifically an<br>indicator of iron<br>status or lead<br>poisoning; not a<br>sensitive test for<br>identifying children<br>with blood lead<br>levels below $25\mu\text{g/dl}$ ;<br>requires further<br>assessment for<br>proper diagnosis. |
|--|--|-------------------------|--|---|







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